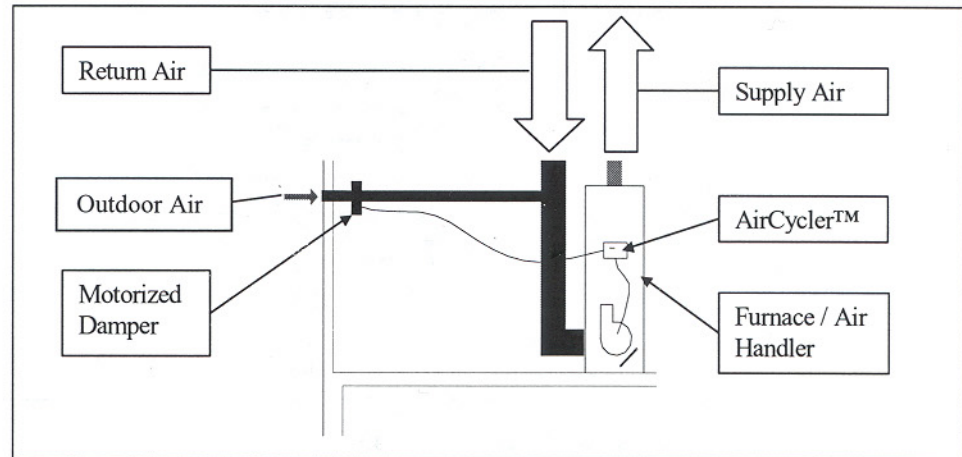


# Ventilation System Installation and Commissioning Guide

This guide has been developed to assist in the installation and commissioning of supply ventilation systems using the AirCycler™ by Lipidex and a motorized damper by Duro Dyne. This guide has been developed based on some of the field problems encountered with the integration of the AirCycler™ and the Duro Dyne damper systems. A schematic of the system is shown below.



## Step 1: Install Motorized Damper

### General Guidelines

- Dampers are specified as normally closed, powered open.
- Do not assume that the supplier has shipped the right unit, or that the motor is installed correctly. Verify that each damper is the right operation, the motor installed is a 24VAC motor (Duro Dyne 24VAC motors have two blue lead wires), the motor does not have end switch wires, and the motor is installed correctly.
- Dampers should be closed and when gently opened by hand, they should return to a closed position.

### Problem

Duro Dyne Damper is delivered to the site with the motor installed, and the damper blade is open with no power to the motor.

### Probable Cause

Damper is set up in "Spring Open" mode.

### Solutions

5. Verify which side of the damper the motor is installed on. If the motor is on the side of the damper that is stamped with S.O. (which stands for Spring Open), then it is installed on the wrong side of the damper. Remove the motor, close the damper, and install the motor on the side of the damper marked S.C. (which stands for Spring Closed).
6. If motor is on the S.C. side of the damper, and the blade is open, then do not install. The damper should be returned to the manufacturer.

## Step 2: Install AirCycler™

1. Verify that power to the furnace is off before attaching wires to the AirCycler™.
2. Follow the wiring diagram provided with the AirCycler™ (Figure 1). Make sure the wires to the motorized damper are connected to the "C" and "V" terminals. Be sure to run one "C" wire to the thermostat as well. Any "Y" wires (cooling control) pass through the housing without being connected to any AirCycler™ terminals.
3. Supply power to the furnace.

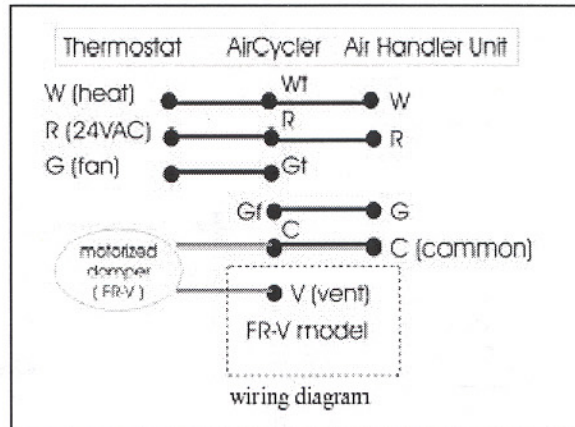


Figure 1. AirCycler™ Wiring Diagram

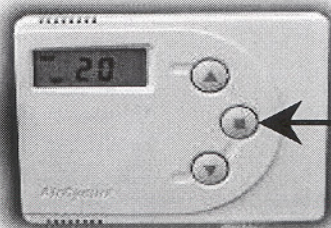
4. Fill out Installation Section of the Installation and Commissioning Checklist and leave paperwork with Owners Manuals at the furnace.

## Step 3: Perform Commissioning of the AirCycler™

### Option 1: Test Mode

This is the factory-programmed method for testing the unit.

1. Once the furnace is operational and the AirCycler™ is powered by the 24VAC system on the furnace, go to the thermostat and turn heating and cooling set points so there is no call for heating or cooling. The fan at the thermostat should be in "Auto" mode.
2. Go to the AirCycler™ and press the button with the square on it (the "Mode" Button) once to enter the "Menu" mode (see Figure 1). At this point "Fan On" should be flashing.



Button to push to enter "Menu" and "Test" Mode, and to turn AirCycler™ on and off.

Figure 2. – AirCycler™ "Mode" button location



3. Now press and hold the button with the square on it again for six seconds. The display should now show the word "TEST."

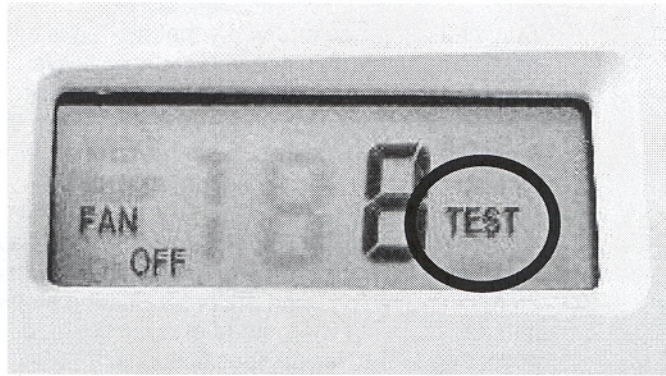


Figure 3. AirCycler™ Display in TEST mode

4. In the TEST mode, the AirCycler™ is running in seconds as opposed to minutes and will cycle the fan on and off and the damper open and closed fairly quickly (one or two on/off cycles per minute). Stay at the furnace and verify that the fan is cycling on and off.
5. Once you are sure the fan is cycling, go to the motorized damper location and listen to hear if the damper is opening and closing as the furnace cycles. If properly installed, when the furnace fan turns on, the motor should activate, opening the damper. When the furnace turns off, the spring should close the damper.
6. Once proper operation has been confirmed in TEST mode, reset the AirCycler™ to normal mode by pressing the button with the square on it for two seconds to turn the AirCycler™ off, wait for five seconds, and then press the same button again to turn the AirCycler™ back on.

Option 2:  
Reprogramming  
AirCycler™ for  
one minute on /  
one minute off  
operation to test

Once the furnace is operational and the AirCycler™ is powered by the 24VAC system on the furnace, go to the thermostat and adjust heating and cooling set points so there is no call for heating or cooling. The fan at the thermostat should be in "Auto" mode.

1. Go to the AirCycler™ and press the button with the square on it once to enter the "Menu" mode.
2. The words "Fan On" should be flashing.
  - Press the down arrow until the time is at "1".
  - Press the button with the square on it to set the Fan On time for 1 minute.
3. The words "Fan Off" should now be flashing.
  - Press the down arrow until the time is at "1".
  - Press the button with the square on it to set the Fan Off time for 1 minute.
4. The words "Vent On" should now be flashing.
  - Press the down arrow until the time is at "1".
  - Press the button with the square on it to set the Vent On time for 1 minute.
5. The words "Vent Off" should now be flashing.
  - Press the down arrow until the time is at "1".
  - Press the button with the square on it to set the Vent Off time for 1 minute. The AirCycler™ will store these settings and return to regular operating mode.

### Step 3: Perform Commissioning of the AirCycler™ *Continued*

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Stay at the furnace and verify that the fan is cycling on and off (one minute on, one minute off). Once you are sure the fan is cycling, go to the motorized damper location and listen to hear if the damper is opening and closing as the furnace cycles. If properly installed, when the furnace fan turns on, the motor should activate, opening the damper. When the furnace turns off, the spring should close the damper.

Once the furnace fan and damper operation have been confirmed, restore the factory defaults (Fan On and Vent On 10 minutes; Fan Off and Vent Off 20 minutes) by following the programming steps above using 10 and 20 minutes respectively, instead of one minute, or set the "On" / "Off" times according to the design specifications.

Complete  
Commissioning  
Checklist

Fill out the Commissioning Section of the Installation and Commissioning Checklist and leave paperwork with the Owners Manuals at the furnace.



## Troubleshooting

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Problem	No display on the AirCycler™
Solution	<ol style="list-style-type: none"><li>1. Make sure:<ul style="list-style-type: none"><li>• the furnace has power and the access panel is in place so the safety switch is closed</li><li>• the thermostat is operational</li><li>• the furnace will operate with a call for heat from the thermostat</li><li>• the fan operates with a fan only signal from the thermostat.</li></ul></li><li>2. Confirm the furnace is providing 24VAC to the AirCycler™ (24VAC between the "C" and "R" terminals on the AirCycler™ base).</li><li>3. Verify that all wiring conforms to the AirCycler™ wiring diagram (see Figure 1).</li><li>4. Make sure the AirCycler™ cover is firmly seated in the base, so that all contact pins are touching.</li></ol> <p>If all power and wiring is correct, and the unit is properly seated, the AirCycler™ is likely to be faulty. Contact the manufacturer.</p>

Problem	AirCycler™ turns furnace fan on and off, but the motorized damper does not cycle.
Solution	<ol style="list-style-type: none"><li>1. Verify that the AirCycler™ is providing a 24VAC signal when the "Fan On / Vent On" cycle is occurring. If 24VAC is not being sent when the "Fan On / Vent On" cycle is occurring, AirCycler™ is likely faulty. Contact the manufacturer.</li></ol> <p>If 24VAC signal is present then:</p> <ol style="list-style-type: none"><li>1. Verify that the motor on the damper is installed properly (motor on the S.C. side of the Duro Dyne damper, with the damper blade in the closed position when no power is being supplied to the unit).</li><li>2. Verify that the 24VAC motorized damper is operational by powering directly with a 24VAC signal.</li><li>3. Verify continuity in the wiring between the damper and the AirCycler™.</li></ol>

Problem	Damper is always open or always closed.
Solution	<ol style="list-style-type: none"><li>1. Verify that motor on damper is on the S.C. (Spring Closed) side of the Duro Dyne damper and that the damper is closed when no power is being supplied to the motor.</li><li>2. Test motor operation by applying 24VAC to motor, and then cutting power to make sure damper motor cycles through open and closed positions.</li><li>3. Check voltage from AirCycler™ "C" and "V" terminals to verify that 24VAC signal is cycling with Vent On/Vent Off timing (see Step 3: Commissioning AirCycler™ section for accelerating the Vent On/Vent Off cycles).</li><li>4. Verify that screw stops are not holding damper open.</li></ol>

# Installation and Commissioning Checklist

Builder Name

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House Address

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Community Name

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Installing Technician

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Commissioning Technician

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Installation Rough In  
Checklist

☐ Motorized damper is installed with blade in closed position, and motor is installed on the side of the damper stamped S.C. (Spring Closed).

☐ Damper motor is 24VAC (two blue leads coming from the Duro Dyne motor).

Commissioning Checklist

☐ AirCycler™ and motorized damper are installed according to the AirCycler™ wiring diagram.

☐ Furnace fan and motorized damper cycling has been verified using one of the following methods (Check One):

☐ Option 1: AirCycler™ test method

☐ Option 2: Reprogramming AirCycler™ for one minute on / one minute off.

☐ AirCycler™ has been programmed for operation using factory defaults (Fan On and Vent On 10 minutes; Fan Off and Vent Off 20 minutes).